Superconductor Science and Technology 2014 vol.27 N3

The influence of an external magnetic field on the triplet proximity effect in ferromagnet/superconductor trilayers

Avdeev M., Proshin Y.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

The properties of the ferromagnet/superconductor (FS) system are theoretically studied in an external magnetic field. We consider the boundary value problem for the Usadel-like equations in the case of the so-called 'dirty' limit. Based on a fit of theoretical and known experimental data for the real symmetrical CuNi/Nb/CuNi trilayer, we expand upon numerical predictions on the asymmetrical F1SF2 and F1F2S systems. It is shown that the asymmetry essentially influences the critical properties of both the trilayers. The appearance of peculiar solitary re-entrant superconductivity caused by an external magnetic field is predicted for the F1F2S system. © 2014 IOP Publishing Ltd.

http://dx.doi.org/10.1088/0953-2048/27/3/035006

Keywords

ferromagnetism, magnetic field, proximity effect, spin valve, superconductivity